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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,800	06/14/2006	Naoyuki Yada	103203-00014	6995
4372	7590	01/21/2010	EXAMINER	
ARENT FOX LLP 1050 CONNECTICUT AVENUE, N.W. SUITE 400 WASHINGTON, DC 20036			TAI, XIUYU	
			ART UNIT	PAPER NUMBER
			1795	
			NOTIFICATION DATE	DELIVERY MODE
			01/21/2010	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCIPDocket@arentfox.com  
IPMatters@arentfox.com  
Patent\_Mail@arentfox.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/582,800	<b>Applicant(s)</b> YADA, NAOYUKI	
	<b>Examiner</b> Xiuyu Tai	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/14/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Claims 1-8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11/3/2009.

### ***Specification***

2. The abstract of the disclosure is objected to because the abstract contains more than 150 words. Correction is required. See MPEP § 608.01(b).

### ***Claim Objections***

3. Claim 15 is objected to because of the following informalities: "a fixed area" appears to be "affixed area". Appropriate correction/clarification is required.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konold (PG-PUB US 2002/0121298) in view of Nomiyama (JP 20003-137199, cited in IDS) and in evidence of Nishio et al (PG-PUB U.S. 2002/0189792).

7. Regarding claim 9, Konold discloses an apparatus for converting solar energy to thermal and electrical energy. The apparatus includes: (1) a photovoltaic unit/grid 101 (i.e. a solar battery panel, Figures 1 & 2, paragraphs [0014], [0039] & [0040]); (2) a heat transfer unit 102 mounted below the photovoltaic grid 101 (i.e. a heat pipe affixed to a back surface of the solar battery panel, Figure 1, 2, & 4, paragraphs [0014] & [0034]), wherein the heat transfer unit 102 converts solar energy into thermal energy from a fluid by discharging heat (paragraph [0014] & [0044]); and (3) a liquid storage tank 104 which may be provided as roof top storage tank for city water (i.e. a hot water generation part, Figures 1, 6, & 8, paragraph [0045] & [0047]), wherein the storage tank is fully capable of performing the claimed functions, such as obtaining water by storing water inside.

Konold teaches a heat transfer unit having tubing (paragraph [0029]), but does not teach that the heat transfer unit has a plate-shaped structure. However, Nomiyama discloses a solar battery panel having a sheet heat pipe underneath the solar panel to transfer heat (Drawing 1 & 2, paragraph [0012]). The teaching of Nomiyama shows that a heat pipe having a plate-shaped structure (paragraph [0012]) can be used as a heat transfer unit and is an equivalent structure to a heat transfer unit having tubing.

Therefore, one having ordinary skill in the art would have found it obvious to substitute a heat pipe having a sheet heat pipe for a heat transfer unit having tubing because they are art-recognized equivalent.

Art Unit: 1795

8. Regarding claim 10, Nomiyama teaches that the heat pipe may be a meandering small tube heat pipe, which utilizes an enclosed working fluid within closed loop small tube by vibration (i.e. a refrigerant fluid in serpentine holes paragraph [0016]).

9. Regarding claim 11, as is evident by the teaching of Nishio et al (paragraphs [0011] - [0013]), it is known in the art that a vibration/oscillation type heat pipe comprises liquid and gas phase alternatively in the meandering small tubes

10. Regarding claim 12, Nomiyama also teaches that the heat pipe may be a micro heat pipe comprising a wick, a work fluid (i.e. an operating fluid), and a capillary pressure power (i.e. a pressure-proof structure, paragraph [0015]).

11. Regarding claim 13, Konold teaches that the heat transfer unit is bonded to the panel using a thermal conducting compound [i.e. a heat conductive adhesive, paragraphs [0014] & [0034]).

12. Regarding claim 14, Konold teaches a copper plate 403 is mated between the photovoltaic grid 401 and the heat exchanger unit 404 (Figure 4, paragraphs [0029] & [0034]).

13. Regarding claim 15, Konold teaches a copper plate 403 is mated between the photovoltaic grid 401 and the heat exchanger unit 404 (Figure 4, paragraphs [0029] & [0034]). Nomiyama teaches that the substrate 13 that the solar panel is stacked upon includes a honeycomb structured body 4 and a heat pipe (Drawing 1, paragraphs [0013]). As is known, the honeycomb structure has open portions and closed portions, wherein the open portions are not affixed to the panel while the closed portions are affixed to the panel by adhesives (paragraph [0013]). As a result, (1) the solar panel

Art Unit: 1795

substrate 13 is divided into a plurality of portions having open portions and closed portions by the honeycomb structured body 4 (i.e. a plurality of fields); and (2) the closed portions of the honeycomb structured body 4 (i.e. affixed areas) are smaller than the areas of the panel (i.e. areas of the field) because the panel is covered by the honeycomb structured body 4 which includes both open portions and closed portions.

14. Regarding claim 16, Konold teaches that the copper plate and the heat exchanger unit are bonded by using thermal conducting compound (paragraph [0034]).

15. Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Konold (PG-PUB US 2002/0121298) and Nomiyama (JP 20003-137199, cited in IDS) as applied to claim 16 above, and further in view of Uroshevich (U.S. 4,388,481).

16. Regarding claim 17, Konold/Nomiyama does not teach a heat release accelerator. However, Uroshevich discloses a concentrating photovoltaic solar collector. The solar collector includes cooling fins 50/114 (Figures 2 & 3, col. 2, line 46) to effectively dissipate heat (col. 3, line 40-42). Therefore, it would be obvious for one having ordinary skill in the art to include cooling fins as suggested by Uroshevich in order to effectively dissipate heat in the device of Konold/Nomiyama.

17. Regarding claim 18, Konold teaches a liquid storage tank 104 which may be provided as roof top storage tank for city water (i.e. Figures 1, 6, & 8, paragraph [0045] & [0047]).

18. Regarding claim 19, the liquid storage tank 104 of Konold may have a tank shape (Figure 1).

Art Unit: 1795

19. Regarding claim 20, the liquid storage tank 104 of Konold connects with the solar panel collector 100 via pipes (Figure 1).

20. Regarding claim 21, Drawing 2 of Nomiyama shows that the solar battery panels 8b and 8c are installed on stair-like structure (i.e. an inclined/sloped structure) and the heat pipe is arranged along the solar panel 8b/8c on the inclined structure (drawing 2, paragraph [0020])). Nomiyama indicates that the arrangement of solar panel on an inclined structure improves energy conversion efficiency (paragraph [0021]). Therefore, it would be obvious for one having ordinary skill in the art to arrange the solar panel in an inclined structure as suggested by Nomiyama in order to improve energy conversion efficiency of Konold/Nomiyama.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuyu Tai whose telephone number is 571-270-1855.

The examiner can normally be reached on Monday - Friday, 7:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/X. T./

Examiner, Art Unit 1795

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795